What is claimed is:

1. A system for controlling and monitoring an electrical system, comprising:

a switchgear housing unit connected to the electrical system that includes a switchgear mechanism for controlling a connection within the electrical system; and

electronic controls for monitoring and controlling the switchgear mechanism,

wherein the electronic controls are embedded within the switchgear housing unit to form a single, self-contained unit.

2. The system of claim 1 wherein the electronic controls include an analog-to-digital conversion component that digitizes voltage and current waveforms within the switchgear housing unit.

3. The system of claim 2 wherein the electronic controls include a digital interface that receives input from the analog-to-digital conversion component to enable an operator to interface with the electronic controls.

4. The system of claim 2 further comprising:

a separate enclosure; and

a digital interface that is housed in the separate enclosure and that is connected to the electronic controls embedded within the switchgear housing unit using a multi-conductor cable that provides electronic control signals to enable an operator to interface with the electronic controls.

5. The system of claim 1 wherein the electronic controls include an energy storage component embedded within the switchgear housing unit to provide backup power to operate the electronic controls and the switchgear mechanism during a power interruption.

6. The system of claim 1 wherein the electronic controls include a programming port to enable an operator to program the electronic controls.

7. The system of claim 1 wherein the electronic controls include:

a current sensing device to measure current in the electrical system;

a voltage sensing device to measure voltage in the electrical system;

an analog-to-digital converter to digitize the measured current and voltage;

a processor device to process the digitized current and voltage measurements; and

a memory device to store the digitized current and voltage measurements.

8. The system of claim 1 wherein the switchgear housing unit and the embedded electronic controls are physically located near a top of a utility pole.

9. The system of claim 1 wherein the switchgear housing unit includes a manual operation device to operate the switchgear mechanism manually.

10. The system of claim 1 wherein the electronic controls include a communications module to enable remote management of the switchgear mechanism.

11. The system of claim 1 wherein the switchgear housing unit includes a mechanism housing with one or more attached interrupter modules.

12. The system of claim 11 wherein the interrupter modules include one or more vacuum interrupters.

13. The system of claim 1 wherein the switchgear mechanism is configured to provide fault isolation to the system.

14. The system of claim 1 wherein the switchgear mechanism is configured to provide switching or tying operations between connections in the electrical system.

15. A method for controlling and monitoring an electrical system, the method comprising:

monitoring the electrical system using electronic controls embedded within a switchgear housing unit; and

controlling the electrical system using the electronic controls embedded within the switchgear housing unit.

16. The method as in claim 15 further comprising:

measuring current and voltage of the electrical system; and

converting the current and voltage measurements to digital current and voltage measurements.

17. The method as in claim 15 further comprising providing backup power to the electronic controls using an energy storage module contained within the switchgear housing unit.

18. The method as in claim 15 further comprising remotely operating the electronic controls using a communications module contained within the switchgear housing unit.

19. The method as in claim 15 further comprising manually operating a switchgear mechanism using a manual operation device contained within the switchgear housing unit.